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EXAMINER

HON, SOW FUN

ART UNIT PAPER NUMBER

1772

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/542,017

Applicant(s)

TAKEDA ET AL.

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 1, 4, 6-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 7-11, 13-14 of copending Application No.10/542,065. Although the conflicting claims are not identical, they are not patentably distinct from each other because said presently examined claims fully encompass said conflicting claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

2. Claims 1- 24 are objected to because of the following informalities:

a) Independent claim 1 recites the phrase "to ultraviolet polymerize thereof" which should be rewritten as "and polymerizing by ultraviolet radiation".

b) Claim 3 contains the term "comprising" which should be "further contains".

b) Claims 8-9 contain the verb "laminating" which should be rewritten as "laminated" in the past tense to correctly represent a product; and claim 10 contains the verb "adhering" which should be rewritten as "adhered" for the same reason.

c) Claim 9, dependent on claim 8, recites "the circularly polarizing plate" of claim 7 upon which claim 8 depends. Claim 9 is clearer when rewritten as "The linear polarizer according to claim 8, wherein the circularly polarizing plate, which is the broad band cholesteric liquid crystal film, is laminated ...".

d) Claims 8-10, 24 all recite a "linearly polarizer" which should be rewritten as "linear polarizer".

e) Claim 14 recites "a selective wavelength of the at least two layers of the reflection polarizer (a) is superimposed on each other" which should be rewritten as "selective wavelengths of the at least two layers of the reflection polarizer (a) are superimposed on each other".

f) Claims 20-21 recite "liquid cell" which should be rewritten as "liquid crystal cell".

g) Claim 18 recites "orienting" which should be rewritten as "oriented".

Claim Rejections - 35 USC § 102

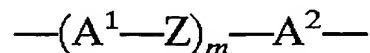
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8, 11-12, 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Verrall (US 6,099,758) as evidenced by Ouderkirk (US 6,573,963).

Regarding claims 1, 3, 5, Verrall teaches a broad band liquid crystal film comprising: a liquid crystal film obtained by polymerizing a liquid crystal mixture containing a polymerizable mesogen compound (a) (abstract), a polymerizable chiral agent (b) (abstract) and a photoisomerizable material (c) which is at least one kind selected from the group consisting of stilbene and a derivative thereof (compound comprising the mesogen is polymerized or admixed with other compounds comprising other mesogenic or mesogeneity supporting groups, column 12, lines 25-31) when MG is selected of formula II of Verrall, shown below, wherein Z is –CH=CH– (column 12, lines 60-67), A¹ and A² are 1,4-phenylene (column 13, line 3) and m = 1.



II

Verrall teaches that the liquid crystal mixture is coated on a substrate (abstract), wherein the liquid crystal mixture further comprises a photopolymerization initiator (d) and is polymerized (polymerization initiator, polymerized by exposure to actinic

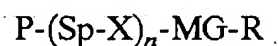
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radiation, abstract, photoinitiator, column 27, lines 49-54) with ultraviolet light (column 27, lines 49-54). Verrall teaches that the broad band liquid crystal film has a reflection bandwidth of 200 nm or more (at least, column 4, lines 21-23). Verrall teaches that the liquid crystal film has a molecular helix structure with a pitch (column 4, lines 28-30), which makes it cholesteric, as evidenced by Ouderkirk.

Ouderkirk teaches that cholesteric liquid crystal has a molecular helix structure with a pitch (rotates in a helical fashion with a pitch, column 4, lines 45-55).

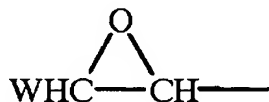
Regarding claim 2, Verrall teaches that a pitch length in the cholesteric liquid crystal film changes continuously (increases from a smaller value at one edge of the film to a higher value at the opposite edge of the film, column 4, lines 27-32).

Regarding claim 4, Verrall teaches that the polymerizable mesogen compound (a) has one polymerizable functional group (ethylene or vinyl, epoxy, column 12, lines 32-45), examples of which are shown below.



I

wherein

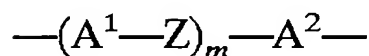


or $\text{CH}_2=\text{CH-Phenyl-(O)}_k\text{-}$ with W being H, CH_3 or Cl and k being 0 or 1,

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Verrall teaches that the polymerizable chiral agent (b) has two or more polymerizable functional groups (column 11, lines 54-55).

Regarding claim 6, Verrall teaches a manufacturing method for the broad band cholesteric liquid crystal film comprising steps of: polymerizing a liquid crystal mixture containing a polymerizable mesogen compound (a) (abstract), a polymerizable chiral agent (b) (abstract) and a photoisomerizable material (c) which is at least one kind selected from the group consisting of stilbene and a derivative thereof (compound comprising the mesogen is polymerized or admixed with other compounds comprising other mesogenic or mesogeneity supporting groups, column 12, lines 25-31) when MG is selected of formula II of Verrall, shown below, wherein Z is $-\text{CH}=\text{CH}-$ (column 12, lines 60-67), A^1 and A^2 are 1,4-phenylene (column 13, line 3) and $m = 1$.



II

Verrall teaches the step of coating the liquid crystal mixture on a substrate (abstract), and the step of polymerizing the liquid crystal mixture with ultraviolet light (column 27, lines 49-54).

Regarding claims 7-8, 11-12, 24, Verrall teaches a circularly polarizing plate comprising the broad band cholesteric liquid crystal film (the light incident on the reflective polarizer is transformed into circularly polarized light, column 9, lines 65-67). Verrall teaches a linear polarizer (create linearly polarized light, column 8, line 54) comprising the circularly polarizing plate and a $\lambda/4$ plate (converts circular polarized light to linear polarized light, column 8, lines 60-63) laminated on the circularly polarizing

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plate (laminating QWF and the reflective polarizer together, column 9, line 5). Verrall teaches a luminaire (illumination, column 10, lines 8-15) comprising the circularly polarizing plate (inventive reflective polarizer 14, column 10, lines 51-52), which is part of the linear polarizer (reflected light redirected onto the reflective polarizer 14, converted by QWF 15 and compensation film 16 into linear polarized light, column 10, lines 63-66) on a front surface side of a surface light source having a reflective layer on the back surface side thereof (backlight unit 11 with a lamp 12 and a combined light guide and reflector 13, column 10, lines 50-52); and a liquid crystal display (device 10, column 10, lines 49-50) comprising a liquid crystal cell (18, column 10, lines 55-56) on a light emitting side of the luminaire (viewer 20, column 11, line 3); in Fig. 1 shown below.

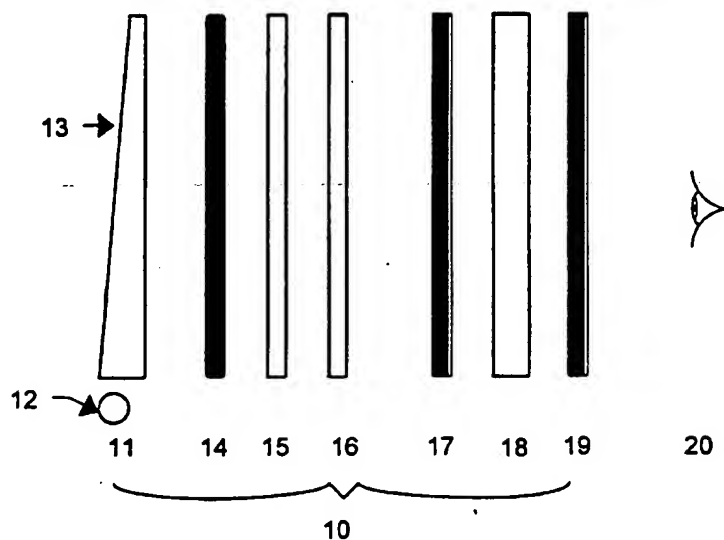


FIG. 1

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk as applied to claims 1-8, 11-12, 24 above.

Verrall as evidenced by Ouderkirk, teaches a broad band cholesteric liquid crystal film comprising: a liquid crystal film obtained by coating a cholesteric liquid crystal mixture containing a polymerizable mesogen compound (a), a polymerizable chiral agent (b) and a photoisomerizable material (c) on a substrate and polymerizing with ultraviolet light, wherein the film has a reflection bandwidth of 200 nm or more; and a linear polarizer comprising a circularly polarizing plate comprising the broad band cholesteric liquid crystal film, and a $\lambda/4$ plate laminated on the reflecting circularly polarizing plate, as described above. Verrall as evidenced by Ouderkirk, fails to teach that the circularly polarizing plate is laminated on the $\lambda/4$ plate so that a pitch length in the film is narrowed toward the $\lambda/4$ plate continuously.

However, Verrall teaches that the liquid crystal mixture is coated and cured directly on the $\lambda/4$ plate which serves as a substrate (column 9, lines 7-10), and that the substrate can function as a polymerization inhibitor, wherein the short pitch is on the side of the film towards the substrate with the smaller inhibiting effect if the other side of

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the film encounters a greater polymerization inhibitor (column 5, lines 45-53). Thus Verrall teaches that laminating the circularly polarizing plate on the $\lambda/4$ plate so that a pitch length in the film is narrowed toward the $\lambda/4$ plate continuously for the purpose of providing the desired viewing effect, is well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have laminated the circularly polarizing plate on the $\lambda/4$ plate so that a pitch length in the film is narrowed toward the $\lambda/4$ plate continuously, in the linear polarizer of Verrall as evidenced by Ouderkirk, in order to provide the desired viewing effect, as taught by Verrall.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk, as applied to claims 1-8, 11-12, 24 above, and further in view of Cobb (US 6,515,785).

Verrall as evidenced by Ouderkirk, teaches the linear polarizer comprising the circularly polarizing plate comprising the broad band cholesteric liquid crystal film, and a $\lambda/4$ plate laminated on the reflecting circularly polarizing plate, as described above. Verrall as evidenced by Ouderkirk, fails to teach that the linear polarizer further comprises an absorption polarizer adhered to the linear polarizer let alone that a transmission axis direction of the absorption polarizer and a transmission axis of the linear polarizer are arranged in parallel with each other.

However, Cobb teaches an absorbing polarizer and a reflecting polarizer laminated together and aligned for highest transmission (column 12, lines 38-46), which is when the transmission axis of the absorption polarizer (802, column 17, lines 44-46)

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and the reflecting polarizer (801, column 17, lines 52-53) are arranged in parallel with each other (801 is rotated to an orientation in which its transmission axis is parallel to the transmission axis of 802, column 59-62), for the purpose of providing enhanced contrast with the highest transmission (column 12, lines 30-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have adhered an absorption polarizer to the reflecting linear polarizer of Verrall as evidenced by Ouderkirk, wherein a transmission axis direction of the absorption polarizer and a transmission axis of the linear polarizer are arranged in parallel with each other, in order to provide enhanced contrast with the highest transmission, as taught by Cobb.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall, as evidenced by Ouderkirk, as applied to claims 1-8, 11-12, 24 above, and further in view of Ouderkirk (US 6,573,963).

Verrall, as evidenced by Ouderkirk, teaches a polarizing element system comprising the circularly polarizing plate comprising the broad band cholesteric liquid crystal film as described above. In addition, Verrall teaches that the circularly polarizing plate comprising the broad band cholesteric liquid crystal film is a reflection polarizer (a) (the light incident on the reflective polarizer is transformed into circularly polarized light, column 9, lines 65-67), combined with a retardation layer (b) which has a retardation of $\lambda/4$, within the claimed range of $\lambda/8$ or more (one of a combination of two or more optical retardation layers with a net retardation of 0.25 times the wavelength of the light reflected by the polarizer over a substantial portion of the reflected bandwidth of the

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polarizer, and used as a QWF, column 9, lines 23-32), for the purpose of compensating for the viewing angle dependence of the phase retardation of light transmitted by the reflective polarizer (column 9, lines 33-37). Verrall teaches that the optical retardation of $\lambda/4$, which is within the claimed range of $\lambda/8$ or more, is relative to incident light incoming at an angle of 30 degrees or more from the normal direction (angle between the optical axis of the linear polarizer and the major optical axis of the QWF is ranging from 30 to 60 degrees, column 10, lines 17-20).

Verrall as evidenced by Ouderkirk, fails to disclose that the retardation layer (b) has a front face retardation of almost zero.

However, Verrall teaches that the incident light incoming in the normal direction (light at normal incidence, column 10, lines 1-3) is transformed into circularly polarized light by the reflection polarizer (a) which is the circularly polarizing plate (column 9, lines 65-67), thus teaching that a front face retardation in the normal direction for the retardation layer (b) is desirably zero or almost zero.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a retardation layer (b) with a front face retardation (in the normal direction) of almost zero combined with the retardation within the range of $\lambda/8$ or more relative to incident light incoming at an angle of 30 degrees or more inclined from the normal direction of the retardation layer (b) of Verrall as evidenced by Ouderkirk, in order to provide increased transformation of incident light into the desired circularly polarized light, as taught by Verrall.

Verrall as evidenced by Ouderkirk, fails to teach that the reflection polarizer (a) comprises at least two layers having respective selective reflection wavelength bands of polarized light superimposed on each other.

However, Ouderkirk teaches a reflection polarizer which comprises at least two layers (two layers having different pitches, column 7, lines 35-39) for the purpose of providing more reflectivity over the entire bandwidth (column 7, lines 40-44), wherein an improvement is to have the respective selective reflection wavelength bands of polarized light superimposed on each other (pitch of the layers varying over a range between the individual pitches of the two layers, column 8, lines 15-17). Hence Ouderkirk demonstrates that it would have been obvious to one of ordinary skill in the art to have provided at least two layers of a reflection polarizer (a) having respective selective reflection wavelength bands of polarized light superimposed on each other, for the purpose of providing reflectivity over the entire bandwidth.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided the reflection polarizer (a) of Verrall, with at least two layers of broad band cholesteric liquid crystal film having respective selective reflection wavelength bands of polarized light superimposed on each other, in order to obtain more reflectivity over the entire bandwidth, as taught by Ouderkirk; and to have arranged the retardation layer (b) between the at least two layers of reflection polarizer (a) of Verrall in view of Ouderkirk, in order to compensate for the viewing angle dependence of the phase retardation of light transmitted by at least the first layer of reflective polarizer (a), as taught by Verrall.

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7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and as evidenced by Kameyama (US 6,088,079).

Verrall in view of Ouderkirk, has been discussed above, and fails to disclose that a selective reflection wavelengths of the at least two layers of the reflection polarizer (a) are superimposed on each other in the wavelength range $550 \text{ nm} \pm 10 \text{ nm}$.

However, Ouderkirk teaches that the first embodiment of the two layers of the reflection polarizer includes two separate reflection bands from about 400 to 500 nm, and from about 600 to 700 nm (column 7, lines 40-46), and that the improvement is where respective selective reflection wavelength bands of polarized light are superimposed on each other (pitch of the layers varying over a range between the individual pitches of the two layers, column 8, lines 15-17). Thus the improvement ideally provides reflection wavelength bands of polarized light superimposed on each other at is the exact middle of the visible spectrum of 400 to 700 nm, which is 550 nm, as evidenced by Kameyama.

Kameyama teaches a broad band cholesteric liquid crystal film which is circularly polarizing over a wavelength having a width of at least 50 nm and including a wavelength of 550 nm, wherein the linearly polarized light obtained through a quarter wavelength plate has a maximum degree of polarization at a wavelength not shorter than 550 nm (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided selective reflection wavelengths of the at

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least two layers of the reflection polarizer (a) of Verrall in view of Ouderkirk, which are superimposed on each other in the wavelength range $550 \text{ nm} \pm 10 \text{ nm}$, as taught by Ouderkirk and as evidenced by Kameyama.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Kashima (US 6,961,106).

Verrall in view of Ouderkirk teaches the retardation layer (b) as discussed above, but fails to teach that it is a layer comprising a cholesteric liquid crystal phase having a selective reflection wavelength band other than the visible light region fixed in planar alignment.

However, Kashima teaches a retardation layer comprising a cholesteric liquid crystal phase having a selective reflection wavelength band in the ultraviolet region, which is other than the visible light region, fixed in planar alignment (abstract) for the purpose of providing the desired optical reflectance and compensation (C plate, column 3, lines 15-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have use a layer comprising a cholesteric liquid crystal phase having a selective reflection wavelength band other than the visible light region fixed in planar alignment, as the retardation layer (b) of Verrall in view of Ouderkirk, in order to provide the desired optical reflectance and compensation, as taught by Kashima.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Taber (US 5,731,886).

Verrall in view of Ouderkirk teaches the retardation layer (b) as discussed above, but fails to teach that it is a layer comprising a rod-like liquid crystal fixed in nematic alignment state.

However, Taber teaches a retardation layer comprising a rod-like liquid crystal fixed in homeotropic alignment state (oriented nematic LC molecules, column 4, lines 65-67) for the purpose of providing the desired optical compensation (column 4, lines 56-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a retardation layer comprising a rod-like liquid crystal fixed in homeotropic alignment state, as the retardation layer (b) of Verrall in view of Ouderkirk, in order to provide the desired optical compensation, as taught by Taber.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Kawata (US 5,518,783).

Verrall in view of Ouderkirk teaches the retardation layer (b) as discussed above, but fails to teach that it is a layer comprising a discotic liquid crystal fixed in nematic phase alignment.

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However, Kawata teaches a retardation layer comprising a discotic liquid crystal fixed in nematic phase alignment (column 3, lines 10-17) for the purpose of providing the desired optical compensation and wide viewing angle (column 3, lines 10-21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a retardation layer comprising a discotic liquid crystal fixed in nematic phase alignment, as the retardation layer (b) of Verrall in view of Ouderkirk, in order to provide the desired optical compensation and wide viewing angle, as taught by Kawata.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Duncan (US 6,175,400).

Verrall in view of Ouderkirk teaches the retardation layer (b) as discussed above, but fails to teach that it is a layer comprising a biaxially oriented polymer film.

However, Duncan teaches a retardation layer comprising a biaxially oriented polymer film (polystyrene, column 11, lines 10-15) for the purpose of providing the desired optical compensation (column 11, lines 10-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a retardation layer comprising a biaxially oriented polymer film, as the retardation layer (b) of Verrall in view of Ouderkirk, in order to provide the desired optical compensation, as taught by Duncan.

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12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Sakatani (Abstract, JP 06-082777).

Verrall in view of Ouderkirk teaches the retardation layer (b) as discussed above, but fails to teach that it is a layer comprising an inorganic layered compound with negative uniaxiality fixed in alignment state where an optical axis thereof is a normal direction of a surface thereof.

However, Sakatani teaches a retardation layer comprising an inorganic layered compound with negative uniaxiality fixed in alignment state where an optical axis thereof is a normal direction of a surface thereof (abstract) as defined by Applicant's specification (page 39, lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a retardation layer comprising an inorganic layered compound with negative uniaxiality fixed in alignment state where an optical axis thereof is a normal direction of a surface thereof, as the retardation layer (b) of Verrall in view of Ouderkirk, in order to provide the desired optical compensation, as taught by Sakatani.

13. Claims 20-23, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verrall in view of Ouderkirk as applied to claim 13 above, and further in view of Kameyama (US 6,088,079).

Verrall in view of Ouderkirk teaches a polarizing element system comprising: a retardation (in the normal direction) of almost zero and a retardation of $\lambda/8$ or more

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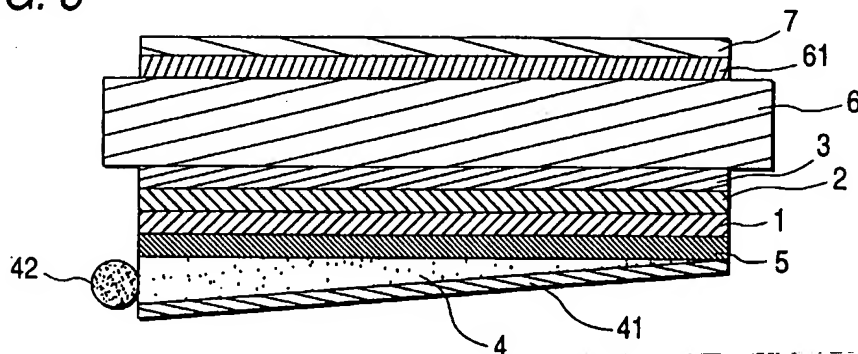
relative to incident light incoming at an angle of 30 degrees or more inclined from the normal direction is arranged between at least two layers of a reflection polarizer (a) having respective selective reflection wavelength bands of polarized light superimposed on each other, wherein the reflection polarizer (a) is a circularly polarizing plate comprising the broad band cholesteric liquid crystal film described above. In addition, Verrall teaches a wide viewing angle liquid crystal display (device 10, column 10, lines 49-50, improved optical properties at large viewing angles, column 2, lines 12-20) comprising a backlight system containing a light source, a polarizing element system and a liquid crystal cell transmitting collimated light (backlight unit 11, lamp 12, inventive reflective polarizer 14, liquid crystal cell 18, column 10, lines 50-56).

Regarding claims 20, 22, 25, Verrall also teaches that the liquid crystal display can additionally comprise diffusers (column 10, lines 21-25). Verrall in view of Ouderkirk, fails to teach the arrangement for the backlight system, wherein the polarizing element system collimates light from a diffuse light source, polarizing plates arranged on both sides of the liquid cell; and a viewing magnification film, which diffuses transmitted light, arranged on a viewer side of the liquid cell, let alone that the viewing angle magnification film is a diffuse plate substantially having neither backscattering nor polarization cancellation.

However, Kameyama teaches a wide viewing angle liquid crystal display (excellent viewing angle characteristics, column 1, lines 45-50) in Fig. 8 shown on the next page, comprising at least: a backlight system containing a polarizing element system to collimate a light from a diffuse light source (light diffusing plate 5 disposed on

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the back light side, column 16, lines 50-59, lighting device comprising a light conductive plate 4, column 16, lines 1-5, light source 42, column 3, lines 20-23); a liquid crystal cell 6 transmitting collimated light; a polarizing plate arranged on both sides of the liquid crystal cell (polarizing plate 3, 61, liquid crystal cell 6, column 3, lines 15-25), and a viewing angle magnification film, which is a diffuse plate which diffuses transmitted light, arranged on a view side of the liquid crystal cell (light diffusing plate 7 for diffusing light to be viewed, column 16, lines 10-12). Kameyama fails to disclose that the diffuse plate substantially has neither backscattering nor polarization cancellation.

FIG. 8

However, Kameyama teaches that the diffuse plate is for diffusing light to be viewed (column 16, lines 10-12), and that excellent brightness and viewing is desired (perceptibility, abstract), implying that the diffuse plate ideally has neither backscattering nor polarization cancellation, for the purpose of providing the desired brightness and perceptibility.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a diffuse plate with substantially neither

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backscattering nor polarization cancellation as the diffuse plate of Kameyama, in order to provide the desired brightness and viewing, as taught by Kameyama.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided an arrangement for a backlight system containing the polarizing system of Verrall in view of Ouderkirk, to collimate light from a diffuse light source; the liquid crystal cell transmitting collimated light; a polarizing plate arranged on both sides of the liquid crystal cell; and a diffuse plate which has substantially neither backscattering nor polarization cancellation, as a viewing magnification film diffusing transmitted light, arranged on a viewer side of the liquid crystal cell; as the arrangement for the backlight system of the wide viewing angle liquid crystal display of Verrall in view of Ouderkirk, in order to provide the desired brightness and viewing, as taught by Kameyama.

Regarding claim 21, Verall also teaches that the $\lambda/4$ plate (QWF 15, column 10, line 52) is arranged on the viewer side (liquid crystal cell side, 18, column 10, lines 55-56) of the polarizing element system (inventive reflective polarizer 14, column 10, line 52). Verrall in view of Ouderkirk, fails to teach that the $\lambda/4$ plate is arranged so that an axial direction of linearly polarized light transmitted and a transmission axis direction of a polarizing plate on the lower side (the light source side) of the liquid crystal display are arranged in parallel with each other.

However, Kameyama teaches that the transmission axis of the polarizing plate is arranged in parallel with the axial direction of linearly polarized light transmitted by the

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$\lambda/4$ plate, for the purpose of providing the most efficient light utilization (column 12, lines 10-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have arranged the $\lambda/4$ plate on the viewer side (the liquid crystal cell side) of the polarizing element system in the liquid crystal display of Verrall in view of Ouderkirk, so that an axial direction of linearly polarized light transmitted and a transmission axis direction of a polarizing plate on the lower side (the light source side) of the liquid crystal display are arranged in parallel with each other, in order to provide the most efficient light utilization, as taught by Kameyama.

Regarding claim 23, Verrall teaches that the liquid crystal display can additionally comprise adhesive layers (column 10, lines 20-25). Verrall in view of Ouderkirk, fails to teach that each layer is laminated with a pressure sensitive adhesive.

However, Kameyama teaches a pressure sensitive adhesive with stress-relaxing properties for laminating each layer (column 14, lines 25-35) for the purpose of providing brightness and excellent display quality (column 14, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a pressure sensitive adhesive as the adhesive laminating each layer in the liquid crystal display of Verrall in view of Ouderkirk, in order to provide improved brightness and display quality, as taught by Kameyama.


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Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

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S. Hon
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06/26/08


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6/27/08